OR-10. RING-OPENING OF AZIRIDINES IN PRESENCE OF DIFFERENT REAGENTS AND CATALYSTS

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Aziridines are highly versatile intermediates in organic synthesis due to their easy access and their susceptibility to ring-opening by facile C–N bond cleavage [1]. These ring opening products are 1,2-bifunctional compounds like diamines, aminols, amino ether, melatonin and α-amino-acid like tryptophan derivatives. In this lecture, it will be discussed our findings as an efficient and facile regioselective ring-opening of aziridines by various nucleophiles under mild and solvent-free conditions using zwitterionic-type salt [2]. We have also observed a regio-selective nucleophilic ring opening of aziridines by HCOOH where the $HCOO^-$ ion acts as a nucleophile [3]. We found that combination of $NH_2OH \cdot HCl$ and $NaIO_4$ is also very effective reagents for nucleophilic ring opening of aziridines [4].

References

1. *Coleman R. S.*, *Chen W.* A Convergent Approach to the Mitomycin Ring System // Org. Lett. 2001. Vol. 3, № 8. P. 1141–1144.

2. Organocatalysis by an aprotic imidazolium zwitterion: regioselective ring-opening of aziridines and applicable to gram scale synthesis / Ghosal N. Chakraborty [et al.] // Green Chem. 2016. Vol. 18, № 2. P. 565–574.

3. An Efficient Synthesis of Oxazolidines by Tandem Ring-Opening / Closing Reaction of Ts-Aziridine Using Formic Acid / Ghosal N. Chakraborty [et al.] // Chemistry Select. 2018. Vol. 3, № 37. P. 10509–10514.

4. A Mild and Efficient Method for the Syntheses and Regioselective Ring-Opening of Aziridines / Ghosal N. Chakraborty [et al.] // SynOpen. 2017. Vol. 1, № 1. P. 0015–0023.

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